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Modernization of statistical production and services and managing for efficiency

Managing an integrated respondent communication

Note by Statistics Portugal

Summary

The paper introduces the experience of Statistics Portugal in integrated respondent communication. The office started ten years ago a process of modernization of its production system. The paper highlights three key elements of this process: implementation of the simplified business information model; the full implementation of an integrated survey management system, and the promotion of a better relationship with data providers by designing a service of customised feedback information to the companies.

The paper is presented for discussion to the first session of the Conference of European Statisticians' seminar "Modernization of statistical production and services and managing for efficiency".

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I. Introduction

1. Like many other industries, producing official statistics is a complex chain of actions, and faces increasing challenges due to the decreasing funding combined with increasing needs for data on new phenomena and emergence of alternative data sources that do not fit well with the traditional concept of official statistics, but which are valued by society. In fact, while society wants more diverse and faster data, other data sources than official statistics are becoming available based on large amounts of data that are automatically accumulated, such as Big Data.

2. Many national statistical offices are still very survey-oriented in the organization of their work. As the utility of statistics for companies and individuals is constantly questioned combined with increasing pressures to cut costs, data providers resist collaborating, and respondents are also demanding for new modes to provide their required data. This new context requires that national statistical offices must be prepared to change their processes, infrastructure and skills combination.

3. Integrating information systems is one major concern among companies and institutions. Better management of internal information is widely accepted as a critical success factor of any organization.

4. After an extensive internal discussion prior to 2005, Statistics Portugal decided to re-engineer its production architecture from a traditional stovepipe approach to a more integrated approach. Business statistics were the first area to benefit from this new system, followed by social statistics.

5. In this process, focusing on business surveys, three key elements are highlighted in the paper:

(a) The implementation of the simplified business information model (an administrative internet-based source) that conveys each year almost census data on the corporation sector, covering the information requested by four public institutions;

(b) The full implementation of an integrated survey management system which consists of components that support the basic statistical production sub-processes collect, process, analyse and disseminate;

(c) The promotion of a better relationship between data providers and Statistics Portugal notably by improving the dialogue with the data providers and by designing a service of customised feedback information to them.

II. Statistics Portugal

6. Statistics Portugal is the Portuguese central authority for the production of statistics. Its main task is to develop and supervise the national statistical system.

7. Survey data collection is a core function of Statistics Portugal, consuming around 40 per cent of its annual budget and 30 per cent of its human resources. A data collection department assures mainly the operation of statistical production phases of collection, processing and analysis of collected microdata, covering all business and social surveys. Data collection staff is spread all over the country (mainland and islands), especially in Lisbon, Oporto, Coimbra, Évora, and Faro, but under centralized system.

8. The autonomous regions of Madeira and Azores have their own authorities for the production of regional specific statistics, while being the data collection

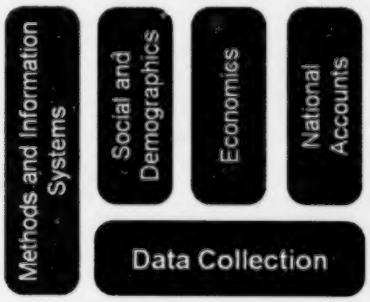
centres for those areas for Statistics Portugal, under common technical requirements and infrastructure.

9. Statistics Portugal has ten years of experience in the modernization of its statistical production and services, improving the efficiency and flexibility. The strategy implied replacing the existent stovepipe model with an integrated model.

10. Business surveys involve around 85,000 different companies, 99 per cent of them are considered as small and medium enterprises. In 2014, 535,000 self-completed questionnaires were collected, 93 per cent of them electronically via WebInq which is an online service dedicated to information providers.

11. The current organization of the statistical production process of Statistics Portugal (simplified) is shown in Figure 1.

Figure 1
Organization of the statistical production process of Statistics Portugal



III. Simplified business information

12. The simplified business information (IES) is a strong example on of how to improve the collaboration between statistical organisations in Portugal.

13. IES system results from the joint efforts of four public institutions and makes it possible to acquire administrative and statistical information in a single process. Conducted electronically, it covers the whole population of enterprises, allowing the simultaneous compliance for several legal information obligations.

14. IES is a form of delivery, electronically and totally paperless form of declarative accounting requirements, taxation and statistics.

15. Before IES, companies were required to provide the same information on their annual accounts to various public entities, through different means:

- Deposit of annual accounts and corresponding record on paper, with the registries of the commercial register;
- Delivery of the annual statement of accounts and tax information to the Ministry of Finance (General Directorate of Taxes Current Tax and Customs Authority - AT);
- Annual information delivery of accounting nature to Statistics Portugal, for statistical purposes;
- Information delivery of annual accounting data for statistical purposes to the Bank of Portugal.

16. Each of these obligations entailed for companies the need to substantially transmit the same information from their annual accounts to four different entities (registries the commercial register, tax authorities, Statistics Portugal and Bank of Portugal) and through four different means.

17. With the creation of IES, all information that companies need to report shall be transmitted in a single moment and before a single entity.

Figure 2
Public institutions that constitute the IES project

18. As a result of a programme set up by the Portuguese government with the purpose of simplifying and modernizing the administration, a number of public entities, including Statistics Portugal took part in the creation of a system that made possible to fulfil the related legal obligations.

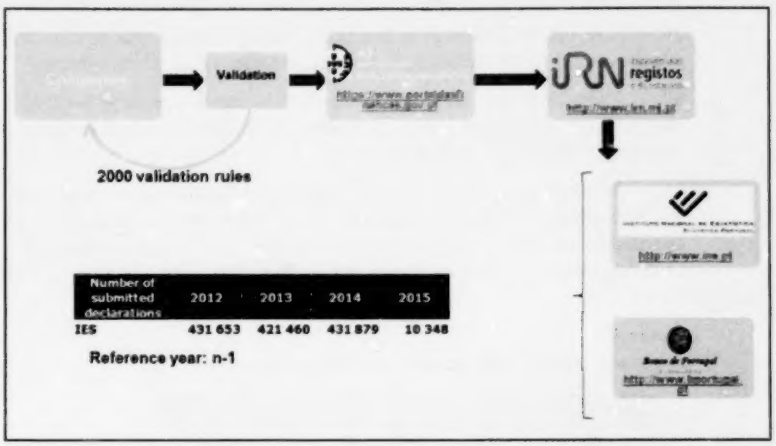
19. IES implementation was only possible with the major involvement of all interested parties. In addition to the public institutions behind its creation, it also had the committed support of the Chamber of Chartered accounts, of enterprises supplying software to other enterprises and of insurance and banking supervisors. However, the political support must be considered the key factor in the implementation of this system.

20. This system started to be developed in February 2006 and was in place in April 2007. It was really a major achievement in so little time, but on the other hand this goal has been pursued by Statistics Portugal longer, since 1990. The process was challenging, and required team work.

21. Concerning the role of Statistics Portugal, what should be highlighted is the proactivity shown all through the process and before it – in fact, it was Statistics Portugal that designed the templates and created almost all the 2,000 editing rules for the common data reporting system. In addition to all the hard work, Statistics Portugal also gained the respect from its partners and gained some more room to propose their own objectives in future collaboration.

22. Surpassing the legal or political barriers, one of the issues to be highlighted as well is that the Ministry of Finance had experience of using the electronic platform that supports the new system – that is one of the big issues when a country wants to put a system like this in place.

Figure 3
IES information cycle



23. Thus, the system uses a platform developed by the Ministry of Finance – since 2000 a law was created making mandatory to all enterprises to submit tax data by electronic means. The Ministry of Justice is usually considered the owner of the information and, therefore, the information is sent to Statistics Portugal and Bank of Portugal through Ministry of Justice. However, Statistics Portugal receives the information daily, and coming through a validation process. Due to the validation process it is not possible to submit a declaration that is not valid, and does not pass all the existing around 2,000 editing rules applied in the process.

24. The whole system has been developed in a collaborative manner: information needs have been exhaustively identified taking into account the different uses of data, with harmonization of concepts and definitions in case common data were needed.

25. Specific data for Statistics Portugal have been included in the collection, namely the information on local units and on activities.

26. Statistics Portugal considers that the creation of this system resulted in a win-win situation. In fact, we can identify advantages for all parts. For the companies, it allows simultaneous fulfilment of four legal obligations (reduction of costs and statistical burden) as well as advantages of the use of an electronic format. For Statistics Portugal, IES allowed to suppress one of the biggest surveys, including more than 60,000 companies, as well as simplifying many other surveys, benefiting of a total coverage, resulting in more information which is available sooner.

IV. Integrated survey management system

27. Like many other national statistical offices, prior to 2004 Statistics Portugal produced statistics through a non-integrated organizational architecture, based on numerous parallel processes, domain by domain, place by place. Data collection activities were conducted by individual survey departments and regional directorates. A survey unit would design their survey, but the development and operations were usually not harmonized. Centralized activity was mainly restricted to some software development and to a weak coordination of the household interviewer workforce.

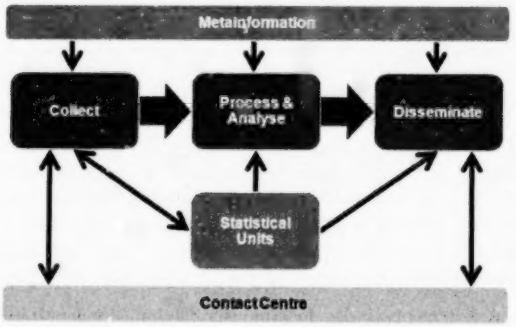
28. After a reflection and a re-organization process in 2004, a project to re-engineer the production architecture was undertaken based on an integrated and process driven approach aiming at improving its efficiency and flexibility.

29. This effort resulted in an Integrated Survey Management System (SIGINQ), which covered firstly the business surveys, and later on the social surveys.

30. From 2008 until now, the number of features supported by SIGINQ grew up continuously. Four years after its first version, SIGINQ covers all business surveys, which are fully supported by this system.

31. SIGINQ aims at offering an integrated infrastructure to better support the statistical production and development in an efficient way, covering all the statistical operations (business and social). It unifies the main components into a comprehensive and interdependent system based on the architecture illustrated in Figure 4.

Figure 4
Integrated survey management system architecture (Level 1)



32. The system follows the basic production sub-processes: collect, process, analyse and disseminate. Statistical units, registers and metadata support the flow of the processes. A contact centre system offers the infrastructure to telephone interviews (for social surveys), and the support to data providers. The next points describe these subsystems, especially the processes and systems that support the production of business statistics.

33. The main components of SIGINQ are described below.

A. Statistical unit registers system

34. The registers aggregate all statistical units which provide the basis for the selection of the populations and samples for all surveys.

35. These registers include variables of identification, localization and characterization of their statistical units. The register is updated to assure quality to the samples, and surveys themselves are one of the most important sources for this purpose.

B. Population and sample system (SIGUA)

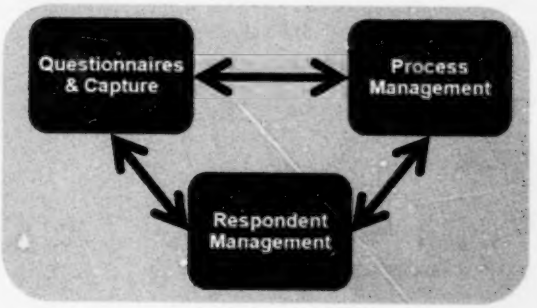
36. This component aims at creating and maintaining a repository to store all of the reference population and the samples selected to the surveys. This is a key element to the data collection system.

37. Online processes to update the repository, managed centrally, are available. One internal collection agent can submit proposals to update some information about the statistical units. These proposals are analysed centrally by methods team, and information is updated, if considered reliable. Finally, the proponent receives the feedback of the proposal, i.e., if it was accepted or rejected and why.

C. Collection system

38. The collection system aims at feeding the statistical production process with microdata, and it is composed of three components: (1) process management; (2) questionnaires and capture, and (3) respondent management. The Figure 5 shows these three components, and the relationships.

Figure 5
Components of the statistical units register system



1. Process management

39. This component is responsible for the management and control of all data collection processes, including information about respondents and metadata. These processes are fully supported by the metadata system.

2. Questionnaires and data capture

40. This system offers the data collection support and information technology solutions, each of them dedicated to a particular mode of collection: electronic, paper, telephone, face-to-face interview, etc. For business surveys, questionnaires and data capture have two components: WebInq and WebReg.

3. WebInq: Surveys on the web

41. WebInq is the area of Statistics Portugal Portal where data providers can respond to survey questionnaires via Internet web forms. Respondents can find information about the surveys and further information about other surveys where the statistical unit is included, the status of response, and also extensive information about the respondent and its response behaviour.

42. WebReg is a clone of WebInq, aiming at supporting the internal data entry of the remaining paper questionnaires, being also a data editing tool.

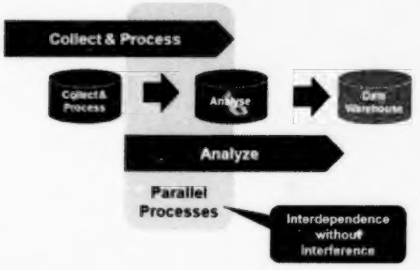
4. Respondent management

43. This component aims to maximize the relationship with the data provider and the respondent. This is achieved through a repository of all respondents, including information about the identification, localization, contacts, relationships and their collection behaviour, history of the collection activity, quality of the data provided, response timing, etc. This tool is very important when the processes are repeated regularly.

5. Process and analyse system

44. This system cleans the data records and prepares the data analysis, the stage where statistics are produced, examined in detail and made ready for dissemination. As the "Process" and "Analyse" phases are iterative and parallel, the system assures the principle of "interdependence but no interference" between both phases, which is represented in the Figure 6. Process and Analysis System supports the following phases and sub-processes of the Generic Statistical Business Process Model (GSBPM): (5.) Process: (5.4) Impute; (5.5) Derive new variables and statistical units; (5.6) Calculate weights; (5.7) Calculate aggregates; (5.8) Finalize data files; (6.) Analyse: (6.1) Prepare data outputs; (6.2) Validate outputs; (6.3) Scrutinize and explain; (6.4) Apply disclosure control; (6.5) Finalize outputs.

Figure 6
Parallel Processing



6. Metadata system

45. This system is composed of several components, such as: terminology and concepts; statistical classifications; repository of questionnaires; methods documents; variables and questions. This system is closely interrelated with collection, process and analysis, and dissemination systems.

7. Contact centre system (SICC)

46. As mentioned before, this system offers the infrastructure for telephone interviews (household surveys), telephone reminders and the support to data providers. It also facilitates the access to context information about data providers, respondents and surveys. From March 2012, SICC supports another component of questionnaires and capture system: telephone data entry (TDE), which is a solution by which respondents can return their data using the keypad on their telephone.

V. Customised feedback to data providers

47. Having an integrated production system is a key element to improve the relationship with respondents. As long as the data collection processes occur, metadata are automatically collected offering an extensive knowledge of the data providers and respondents.

48. Nowadays, it is easy to answer some questions like: What are the surveys that a company or a respondent is involved in? What is their response behaviour? Those questions where nearly impossible to answer with the former approach.

49. Harmonized tools are used to provide improved respondent communication. Standard reminder and follow-up strategies are in place, having an active capability to modify the implemented approaches according to the development of a certain data collection campaign.

50. Written questions, complaints and suggestions from respondents are handled centrally to ensure a consistent reaction based on standard templates.

51. Statistics Portugal's efforts to improve the consistency of respondent communication are illustrated by the following example. In 2013, Statistics Portugal carried out an ad-hoc survey to data providers which allowed obtaining a picture of how the obligation to report statistical data is viewed by the respondents. The results provided new information on the perceived response burden and the quality of the data reported, and Statistics Portugal obtained critical suggestions for the improvement of procedures of data collection. After the survey, one of the major results was the following: "Companies consider that the statistical information disseminated by Statistics Portugal has significant utility to the society, but they are more reluctant to admit their own interest on it." These results are presented in Figures 7 and 8 as follows.

Figure 7

Perception of the usefulness of statistical information for the society according to the company size

Company size	*Very useful*	*Useful*	*Not very useful*	*Useless*	*Do not know*
Big	25.5%	57.2%	9.2%	2.8%	5.3%
Medium	20.5%	58.3%	12.4%	1.9%	6.8%
Small	17.2%	55.3%	16.7%	3.7%	7.1%
Total	18.5%	56.1%	15.2%	3.2%	6.9%

Figure 8

Perception of the usefulness of statistical information for the company according to the company size

Company size	*Very useful*	*Useful*	*Not very useful*	*Useless*	*Do not know*
Big	7.1%	44.8%	35.9%	4.4%	7.8%
Medium	4.6%	42.4%	36.3%	9.2%	7.5%
Small	3.6%	40.4%	35.3%	11.7%	9.1%
Total	4.1%	41.1%	35.5%	10.6%	8.6%

52. In order to deal with these contradictory perceptions and also offer a sign of recognition for information providers and their efforts, Statistics Portugal recently started to make available a new feature of the WebInq: the customised feedback to data providers.

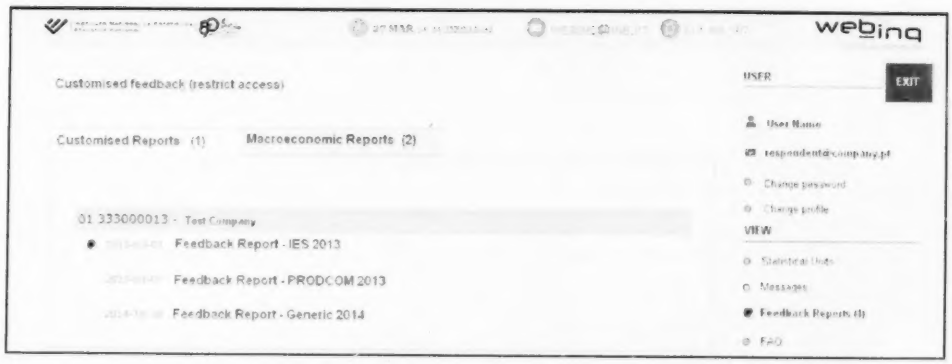
53. This feedback corresponds to the periodic provision of three types of reports:

- Customised reports, which bring together, in a synthetic and targeted way by themes, the information collected, including indicators of the relative position of the company given the results of investigations in which it participates and other information of a specific nature, provided they do not compromise the principle of statistical confidentiality;
- National macroeconomic framework, quarterly updated;
- A link to the electronic brochure of economic activity more updated.

54. For confidentiality reasons, this feature is available to specific WebInq users with the proper authorization from the companies to access this kind of sensitive information.

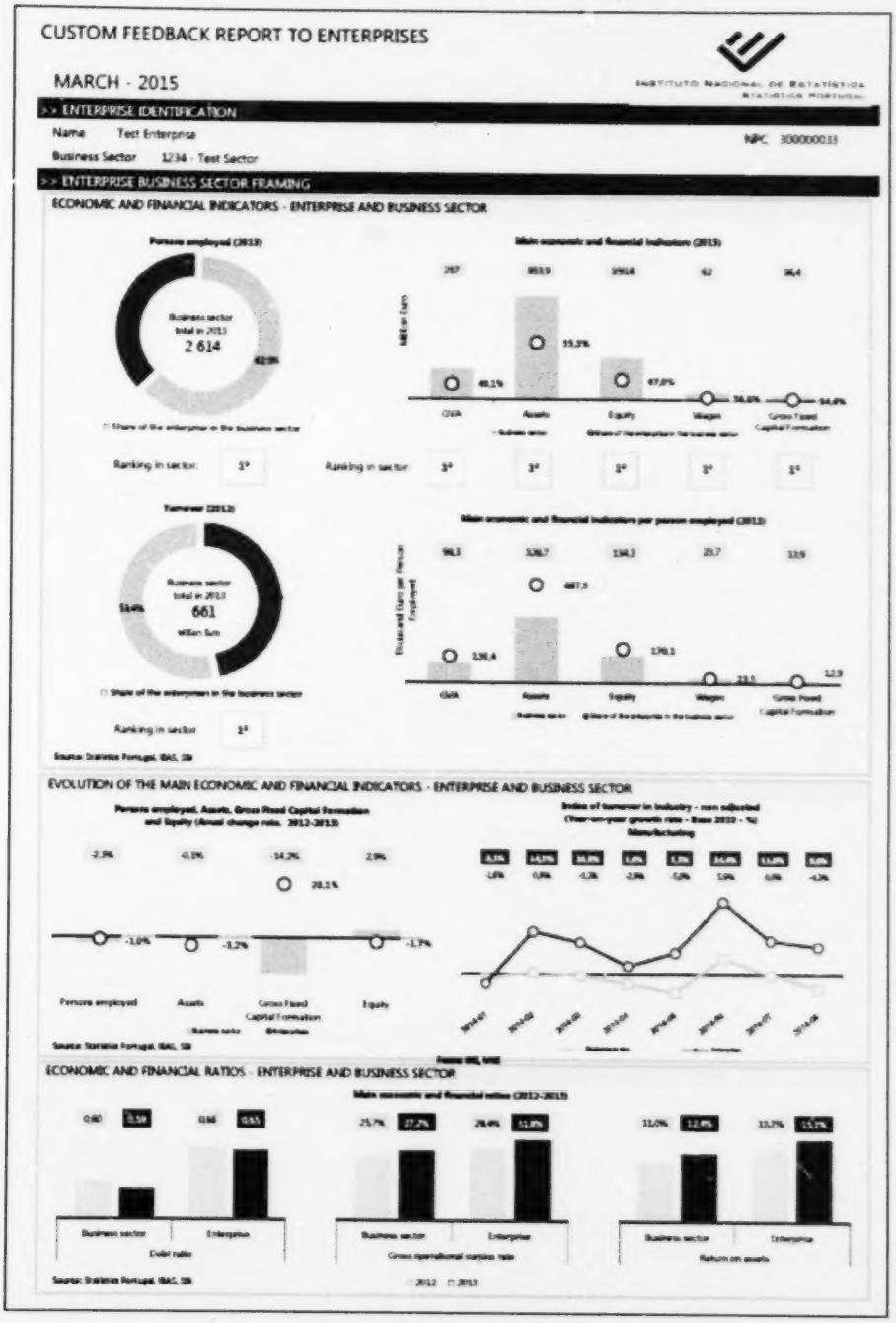
55. After authentication by username and password, the respondent can access customized reports for all companies who have authorized his or her access to WebInq, as shown, as shown in Figure 9.

Figure 9
WebInq menu to access the customised feedback reports



The reports have been designed in a very concise manner, using graphics and images, as in the example shown in Figure 10.

Figure 10
Example of a personalised report to a data provider (fictitious)


CUSTOM FEEDBACK REPORT TO ENTERPRISES
MARCH - 2015
>> ENTERPRISE IDENTIFICATION
Name Test Enterprise
Business Sector 1234 - Test Sector
>> ENTERPRISE BUSINESS SECTOR FRAMING
ECONOMIC AND FINANCIAL INDICATORS - ENTERPRISE AND BUSINESS SECTOR
EVOLUTION OF THE MAIN ECONOMIC AND FINANCIAL INDICATORS - ENTERPRISE AND BUSINESS SECTOR
ECONOMIC AND FINANCIAL RATIOS - ENTERPRISE AND BUSINESS SECTOR